April 15, 2003

Ms. Mary King
Micronutrients
1550 Research Way
Indianapolis, Indiana 46231

Re: Registered Construction and Operation Status,
097-15697-00417

Dear Ms. King:

The application from Micronutrients, received on March 11, 2002, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.5, it has been determined that the following operation of research leading to the development of trace mineral salts, to be located at 1550 Research Way, Indianapolis, Indiana 46231, is classified as registered:

(a) One (1) natural gas fired scotch boiler, identified as HB-1, installed in 1998, with a maximum heat input capacity of 8.4 million Btu per hour (MMBtu/hr), and exhausting to stack B-1.

(b) One (1) natural gas fired scotch boiler, identified as HB-2, installed in 2002, with a maximum heat input capacity of 12.6 million Btu per hour (MMBtu/hr), and exhausting to stack B-2.

(c) One (1) natural gas fired production dryer, identified as PD-1, installed in 1995, with a maximum heat input capacity of 1.5 million Btu per hour (MMBtu/hr), and a maximum process weight rate of 1.15 tons basic copper chloride per hour, using a dust collector as particulate matter (PM) control, and exhausting to stack D-1.

The following conditions shall be applicable:

(a) Pursuant to the New Source Performance Standard (NSPS), 326 IAC 12, (40 CFR 60, Subpart Dc), daily natural gas consumption for the natural gas fired boiler, identified as HB-2, with a maximum capacity of 12.6 million Btu per hour (MMBtu/hr) shall be recorded as per 40 CFR Part 60 Subpart Dc. Records shall be retained for a period of at least five (5) years from the date of the generation of the measurement or record.

(b) Pursuant to 40 CFR 60 §60.48c(a), for HB-2, the owner or operator of this source shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by §60.7 of this rule.

(c) Pursuant to 326 IAC 1-6-3 (Preventive Maintenance Plan), any person responsible for operating any facility required to obtain a Permit shall prepare and maintain a Preventive Maintenance Plan which includes the following:

(1) Identification of responsible individuals for inspecting, maintaining and repairing emission control devices.

(2) Description of items and conditions that will be inspected and an

inspection schedule.

(3) Identification of replacement parts in inventory for quick replacement.

The Preventive Maintenance Plan shall be submitted upon request and subject to review and approval by OES.

(c) Pursuant to 326 IAC 5-1-2 (Opacity Limitations) except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following:

(1) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(2) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of 15 minutes (60 readings) in a 6-hour period as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor in a six (6) hour period.

(d) Pursuant to 326 IAC 6-2-4 (Particulate Emissions Limitations for Sources of Indirect Heating), particulate emissions from the natural gas fired boiler identified as HB-1 shall not exceed 0.6 pounds per million Btu (lbs/MMBtu), and particulate emissions from the natural gas fired boiler identified as HB-2 shall not exceed 0.49 pounds per million Btu (lbs/MMBtu).

(e) Pursuant to 326 IAC 6-3-2 (Process Operations), particulate emissions shall not exceed 4.5 pounds per hour for dryer PD-1, and the dust collector shall be in operation any time that FSH is in operation in order to comply with this limit.

This registration is the first air approval issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant to 326 IAC 2-5.5-4(a)(3). The annual notice shall be submitted to:

Compliance Data Section
Office of Air Quality
100 North Senate Avenue
P.O. Box 6015
Indianapolis, IN 46206-6015
and
Office of Environmental Services
Air Quality Management Section, Compliance Data Group
2700 South Belmont Avenue
Indianapolis, Indiana 46221-2097

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Original Signed by John B. Chavez
John B. Chavez, Administrator

aco

cc: File, Marion County
Air Compliance, Matt Mosier
IDEM, Mindy Hahn
Permits, Angelique Oliger

Registration
Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.1-2(f)(3).

Company Name:	**Micronutrients**
Address:	**1550 Research Way**
City:	**Indianapolis, Indiana**
Authorized individual:	**Mary King**
Phone #:	**(317) 486-5888**
Registration #:	**097-15697-00417**

I hereby certify that Micronutrients is still in operation and is in compliance with the requirements of Registration 097-15697-00417.

Name (typed):
Title:
Signature:
Date:

Indiana Department of Environmental Management
Office of Air Quality
and
City of Indianapolis
Office of Environmental Services

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name: Micronutrients
Source Location: 1550 Research Way, Indianapolis, Indiana 46231
County: Marion
SIC Code: 2819
Operation Permit No.: 097-15697-00417
Permit Reviewer: Angelique Oliger

The Office of Environmental Services (OES) has reviewed an application from Micronutrients relating to the construction and operation of research leading to the development of trace mineral salts.

Unermitted Emission Units and Pollution Control Equipment

The source consists of the following unpermitted emission units and pollution control devices:

(a) One (1) natural gas fired scotch boiler, identified as HB-1, installed in 1998, with a maximum heat input capacity of 8.4 million Btu per hour (MMBtu/hr), and exhausting to stack B-1.

(b) One (1) natural gas fired scotch boiler, identified as HB-2, installed in 2002, with a maximum heat input capacity of 12.6 million Btu per hour (MMBtu/hr), and exhausting to stack B-2.

(c) One (1) natural gas fired production dryer, identified as PD-1, installed in 1995, with a maximum heat input capacity of 1.5 million Btu per hour (MMBtu/hr), and a maximum process weight rate of 1.15 tons basic copper chloride per hour, using a dust collector as particulate matter (PM) control, and exhausting to stack D-1.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^{0}F)
B-1	HB-1	35	15.75	1400	475
B-2	HB-2	35	19.75	2100	475
D-1	PD-1	40	13.75	3700	270

Enforcement Issue

(a) IDEM and OES are aware that equipment has been constructed and operated prior to receipt of the proper permit. The subject equipment is listed in this Technical Support Document under the condition entitled *Unpermitted Emission Units and Pollution Control Equipment.*

(b) OES is reviewing this matter and will take appropriate action. This proposed permit is intended to satisfy the requirements of the construction permit rules.

Recommendation

The staff recommends to the Administrator that the construction and operation be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

A complete application for the purposes of this review was received on March 11, 2002.

Emission Calculations

See Appendix A (three pages) of this document for detailed emissions calculations. Calculations of dryer emissions submitted by the source have been reviewed and confirmed correct.

Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source or emissions unit to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA, the department, or the appropriate local air pollution control agency."

Pollutant	Potential To Emit (tons/year)
PM	3.83
PM-10	3.83
SO_2	negligible
VOC	0.57
CO	6.1
NO_x	11.18
HAPs	negligible

(a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of NO_x is equal to or greater than ten (10) tons per year and equal to or less than twenty-five (25) tons per year. The potential to emit (as defined in 326 IAC 2-7-1(29)) of all other criteria pollutants is less than twenty-five (25) tons per year. Therefore, the source is registered and subject to the provisions of 326 IAC 2-5.5.

(b) Fugitive Emissions
Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Actual Emissions

No previous emission data has been received from the source.

County Attainment Status

The source is located in Marion County.

Pollutant	Status
PM-10	attainment
SO_2	maintenance attainment
NO_2	attainment
Ozone	maintenance attainment
CO	attainment
Lead	unclassifiable

(a) Volatile organic compounds (VOC) are precursors for the formation of ozone. Therefore, VOC emissions are considered when evaluating the rule applicability relating to the ozone standards. Marion County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(b) Marion County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

(c) Fugitive Emissions
Since this type of operation is not one of the 28 listed source categories under 326 IAC 2-2, 40 CFR 52.21, or 326 IAC 2-3 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

Source Status

New Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/ or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	3.83
PM10	3.83
SO_2	negligible
VOC	0.57
CO	6.1
NO_x	11.18
Single HAP	negligible
Combination HAPs	negligible

(a) This new source is not a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

(a) each criteria pollutant is less than 100 tons per year,
(b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
(c) any combination of HAPs is less than 25 tons/year.

This is the first air approval issued to this source.

Federal Rule Applicability

(a) This source is subject to the New Source Performance Standard, 326 IAC 12, (40 CFR 60, Subpart Dc) since operation of the natural gas fired boiler, HB-2, commenced after June 9, 1989 and the maximum design heat input capacity is greater than ten (10) million Btu per hour (MMBtu/hr) but less than one hundred (100) million Btu per hour (MMBtu/hr).

(1) Daily natural gas consumption for the natural gas fired boiler, identified as HB-2, with a maximum capacity of 12.6 million Btu per hour (MMBtu/hr) shall be recorded as per 40 CFR Part 60 Subpart Dc. Records shall be retained for a period of at least five (5) years from the date of the generation of the measurement or record.

(2) Pursuant to 40 CFR 60 §60.48c(a), the owner or operator of this source shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by §60.7 of this rule.

Subpart Dc does not apply to boiler HB-1 because it has a maximum design heat input capacity of less than ten (10) million Btu per hour (MMBtu/hr).

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this source

State Rule Applicability - Entire Source

326 IAC 1-6-3 (Preventive Maintenance Plan)

This source is subject to 326 IAC 1-6-3 because it is required to obtain a Permit. Any person responsible for operating any facility required to obtain a Permit shall prepare and maintain a Preventive Maintenance Plan which includes the following:

(a) Identification of responsible individuals for inspecting, maintaining and repairing emission control devices.

(b) Description of items and conditions that will be inspected and an inspection schedule.

(c) Identification of replacement parts in inventory for quick replacement.

The Preventive Maintenance Plan shall be submitted upon request and subject to review and approval by OES.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants)

This source is not subject to 326 IAC 2-4.1, because it is not a major source of hazardous air pollutants, as defined in 40 CFR 63.

326 IAC 2-6 (Emission Reporting)

This source is subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit more than ten (10) tons per year of NO_x and is located in Marion County. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by April 15 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8)(Emission Statement Operating Year)..

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Exemptions), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of thirty percent (30%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-1-2 (Particulate Emissions Limitations)

This rule does not apply to this source because the potential to emit of particulate is less than one hundred (100) tons per year and it is not a specifically listed source in 326 IAC 6.

326 IAC 6-2-4 (Particulate Emissions Limitations for Sources of Indirect Heating)

The natural gas fired boilers are subject to the provisions of 326 IAC 6-2-1(d) because they are located in Marion County and were constructed after September 21, 1983.

Particulate emissions from indirect heating facilities shall be limited by the following equation:

$$Pt = 1.09/Q^{0.26}$$

where Pt = Pounds of particulate matter emitted per million Btu (lb/MMBtu) heat input.

Q = Total source maximum operating capacity rating in million Btu per hour (MMBtu/hr) heat input.

For Q greater than ten (10) million Btu per hour (MMBtu/hr), particulate emissions shall not exceed 0.6 pounds per million Btu (lbs/MMBtu). Therefore, particulate emissions from the natural gas fired boiler identified as HB-1 shall not exceed 0.6 pounds per million Btu (lbs/MMBtu), and particulate emissions from the natural gas fired boiler identified as HB-2 shall not exceed 0.49 pounds per million Btu (lbs/MMBtu).

326 IAC 6-3-2 (Process Operations)

Interpolation of the data for all particulate emitting units shall be accomplished by use of the equation for the process weight rate up to sixty thousand (60,000) pounds per hour:

$$E = 4.10\ P^{0.67}$$

where E = rate of emission in pounds per hour and
P = process weight rate in tons per hour

Particulate emissions shall not exceed 4.5 pounds per hour for dryer PD-1, and the dust collector shall be in operation any time that FSH is in operation in order to comply with this limit.

326 IAC 7-1 (Sulfur Dioxide Emission Limitations)

This rule does not apply to this source because the potential to emit of each individual unit is less than 25 tons per year or 10 pounds per hour of Sulfur Dioxide.

Conclusion

The construction and operation of research leading to the development of trace mineral salts shall be subject to the conditions of the attached proposed registration 097-15697-00417.

Appendix A: Emission Calculations
Natural Gas Combustion Only
MM Btu/hr 0.3 - < 10

Company Name: **Micronutrients**
Address City IN Zip: **1550 Research Way, Indianapolis, Indiana 46231**
Exemption No.: **097-15697-00417**
Reviewer: Angelique Oliger
Date: 19-Mar-03

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
9.9	86.7

	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	13.7	13.7	0.6	100.0	5.3	21.0
Potential Emission in tons/yr	0.59	0.59	0.03	4.34	0.23	0.91

Methodology
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors for NOx: uncontrolled = 100, Low Nox Burner = 17, Flue gas recirculation = 36
Emission Factors for CO: uncontrolled = 21, Low NOx Burner = 27, Flue gas recirculation = ND
Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu
Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, and 1.4-3, SCC #1-03-006-03
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Appendix A: Emissions Calculations
Natural Gas Combustion Only
MM BTU/HR <100
Small Industrial Boiler

Company Name: **Micronutrients**
Address City IN Zip: **1550 Research Way, Indianapolis, Indiana, 46231**
Exemption No.: **097-15697-00417**
Reviewer: Angelique Oliger
Date: 19-Mar-03

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
12.6	110.4

	Pollutant					
	PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	7.6	7.6	0.6	100.0 *see below	5.5	84.0
Potential Emission in tons/yr	0.42	0.42	0.03	5.52	0.30	4.64

Methodology

All emission factors are based on normal firing.
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32
PM emission factors are condensable and filterable.

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)
Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

See page 2 for HAPs emissions calculations.

Appendix A: Emissions Calculations
Commercial/Institutional/Residential Combustors (< 100 mmBtu/hr)
Gas Boiler
HAPs Emissions

Company Name: Micronutrients
Address, City IN Zip: 1550 Research Way, Indianapolis, Indiana, 46231
Exemption No.: 097-15697-00417
Reviewer: Angelique Oliger
Date: 37699

AP-43 data given in lb/mmcf: To convert lb/mmcf-lb/mmbtu, divide by 1,020

HAPs - Metals

	Arsenic	Beryllium	Cadmium	Chromium	Lead
Emission Factor in lb/mmcf	2.0E-04	1.2E-05	1.1E-03	1.4E-03	0.0E+00
Emission Factor in lb/mmBtu	2.0E-07	1.2E-08	1.1E-06	1.4E-06	0.0E+00
Potential Emission in tons/yr	1.08E-05	6.49E-07	5.95E-05	7.57E-05	0.00E+00

HAPs - Metals (continued)

	Mercury	Manganese	Nickel	Selenium	**Total Haps Metals**
Emission Factor in lb/mmcf	2.6E-04	3.8E-04	2.1E-03	2.4E-05	
Emission Factor in lb/mmBtu	2.5E-07	3.7E-07	2.1E-06	2.4E-08	
Potential Emission in tons/yr	1.41E-05	2.06E-05	1.14E-04	1.30E-06	3.21E-04

HAPs - Organics

	Methylnapthale	3-Methylchloranthrene	7,12-Dimethylbenz(a)anthracen	Acenapthene	Acenapthylene
Emission Factor in lb/mmcf	2.4E-05	1.8E-06	1.6E-06	1.8E-06	1.8E-06
Emission Factor in lb/mmBtu	2.4E-08	1.8E-09	1.6E-09	1.8E-09	1.8E-09
Potential Emission in tons/yr	1.30E-06	9.74E-08	8.66E-08	9.74E-08	9.74E-08

HAPs - Organics(continued)

	Anthracene	Benz(a)anthracene	Benzene	Benzo(a)pyrene	Benzo(b)fluoranthene
Emission Factor in lb/mmcf	2.4E-06	1.8E-06	2.1E-03	1.2E-06	1.8E-06
Emission Factor in lb/mmBtu	2.4E-09	1.8E-09	2.1E-06	1.2E-09	1.8E-09
Potential Emission in tons/yr	1.30E-07	9.74E-08	1.14E-04	6.49E-08	9.74E-08

HAPs - Organics(continued)

	nzo(g,h,i)peryle	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Dichlorobenzene
Emission Factor in lb/mmcf	1.2E-06	1.8E-06	1.8E-06	1.2E-06	1.2E-03
Emission Factor in lb/mmBtu	1.2E-09	1.8E-09	1.8E-09	1.2E-09	1.2E-06
Potential Emission in tons/yr	6.49E-08	9.74E-08	9.74E-08	6.49E-08	6.49E-05

HAPs - Organics(continued)

	Fluoranthene	Fluorene	Formaldehyde	Hexane	Indeno(1,2,3-cd)pyrene
Emission Factor in lb/mmcf	3.0E-06	2.8E-06	7.5E-06	1.8E+00	1.8E-06
Emission Factor in lb/mmBtu	2.9E-09	2.7E-09	7.4E-09	1.8E-03	1.8E-09
Potential Emission in tons/yr	1.62E-07	1.51E-07	4.06E-07	9.74E-02	9.74E-08

HAPs - Organics(continued)

	Naphthalene	e	**Total Haps Organics**	**Total Haps Combined**
Emission Factor in lb/mmcf	6.1E-04	1.7E-05		
Emission Factor in lb/mmBtu	6.0E-07	1.7E-08		
Potential Emission in tons/yr	3.30E-05	9.20E-07	9.76E-02	9.79E-02

Methodology

Potential Emissions (tons/year) = Throughput (mmBtu/hr)*Emission Factor (lb/mmBtu)*8,760 hrs/yr / 2,000 lb/ton